

2006년 10월

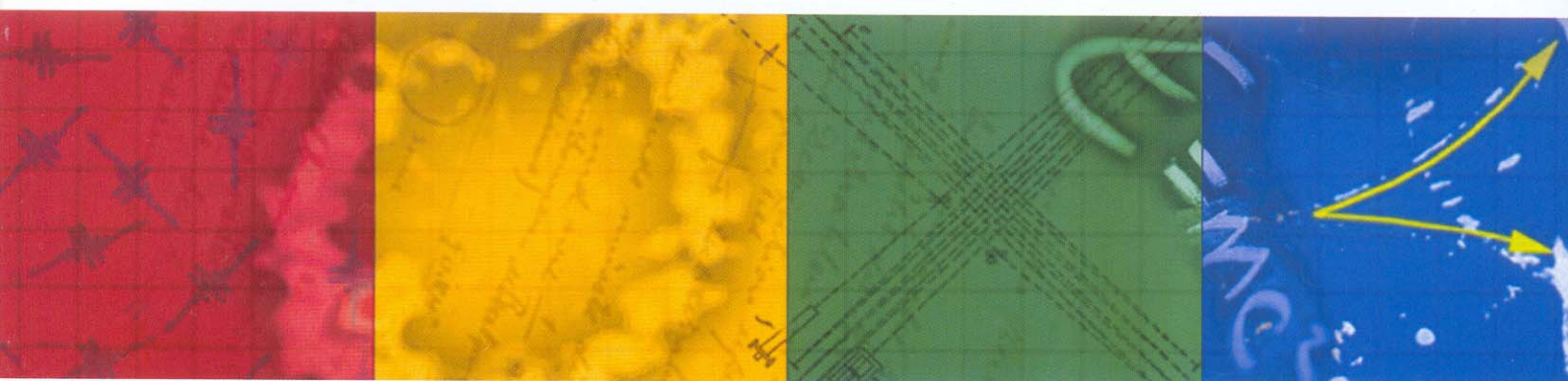
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E-04 Relationship Between Carrier Mobility

And Oxygen Vacancy In Ferromagnetic Mn-doped ZnO
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We investigated the carrier and the magnetic properties of $Zn_{0.96}Mn_{0.04}O_{1-\delta}$ (ZMO) and undoped $ZnO_{1-\delta}$ (ZO) grown on Si(100) substrates by UHV co-sputtering in a wide range of oxygen partial pressures (P_O). The magnetic and the carrier characteristics were determined by the SQUID and the Hall measurements, respectively. The ZMO films with a high oxygen vacancy (V_O) exhibits a ferromagnetic order at room temperature, whereas a low V_O leads to disappearance of the ferromagnetism. The oxygen vacancies, whose concentration is determined by the oxygen-resonant Rutherford Backscattering spectroscopy, are produced in a wide range of P_O , resulting in an enhanced carrier concentration. It should be also noted that the mobility in ZMO and ZO slightly decreases as P_O decreases. The ZMO is more sensitive to P_O than ZO in the mobility, indicating that the mobility is more sensitive to V_O in highly resistive ZMO, and is likely due to the increased density of scattering centers for the carriers.

E-05 Enhancement of Photoluminescence of

Hybrid Double Wall Nanotubes of Light Emitting Polymer Enveloped by Inorganic metal
박 동혁, 이 용백, 김 현승, 정 미윤, 주 진수, 김 대철¹, 김 련¹, 김 정용¹(고려대학교 물리학과. ¹인천대학교 물리학과.)
나노 직경을 가지는 다공성 무기 배경 물질(나노 기공 직경: 100~200 nm)을 이용하여 전기화학 중합방법을 통해서 발광 고분자인 polythiophene (PT) 과 그 유도체인 poly (3-methylthiophene) (P3MT) 나노튜브를 합성하고 연속적으로 무기물 금속(Co, Ni, Cu) 나노튜브를 합성하여 원통모양의 이중 구조로 이루어진 이중이중벽 나노튜브를 합성하였다. 나노튜브의 합성 여부를 전자주사 현미경(SEM)과 투과 전자 현미경(TEM) 및 고분해능 투과 전자 현미경(HR-TEM)을 이용하여 확인하였다. 합성된 나노튜브의 광학적, 구조적 및 자기적 특성을 확인하기 위해서 UV/Vis absorbance, photoluminescence (PL), X-ray diffraction (XRD), vibrating sample magnetometer(VSM) 실험을 수행하였다. 자체 제작된 원자력 현미경 (AFM)과 레이저 공초점 현미경 (Laser scanning confocal microscope)를 사용하여 합성된 나노 튜브의 한가닥 발광 및 라만 특성을 관찰하였

다. 금속이 쌓여진 이중이중벽 PT와 P3MT의 PL 증가 현상을 관찰하였다.

E-06 Study of Surface and Bulk Dynamics of

Block Copolymer Films by X-ray Photon Correlation Spectroscopy
LEE Heeju, LEE Young Joo, KIM Hyunjung, JIANG Zhang¹, SINHA Sunil K.¹, JIAO Xuesong², LURIO Laurence², RUEHM Adrian³, MOCHRIE S. G. J.⁴(Sogang University, Department of Physics and Interdisciplinary Program of Integrated Biotechnology, Korea. ¹University of California San Diego, Department of Physics, USA. ²Northern Illinois University, Department of Physics, USA. ³Max-Planck-Institut fuer Metallforschung, Germany. ⁴Departments of Physics and Applied Physics, Yale University, USA.)
We have studied the structural and dynamical properties of block copolymer films to examine how they differ from those properties in bulk by x-ray photon correlation spectroscopy (XPCS). Block copolymers exhibit internal interactions and therefore an internal structure (in our case spherical micelles). This ought to have a strong influence on the physical properties of the thin films. It can be expected that the dynamics is strongly altered once the film thickness reaches the characteristic lengths scale in the polymer, which is in our case given by the micelle diameter. We have characterized the surface dynamics of supported block-copolymer films of poly(styrene-b-dimethylsiloxane) of thicknesses varying from 20 to 300nm as a function of lateral length scale, film thickness, and temperature. The measured surface dynamics will be compared with the theory of overdamped thermal capillary waves on thin films. The results will be discussed with the surface dynamics observed in thin PS films.

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■ SESSION: E/K [EF1]/[KF1]
10월 20일 (금), 09:00 - 10:45
409호

EF-01(초) Enhancement of optical properties in